Singerman, Joel

From: Brown, Janet E (DEC) <janet.brown@dec.ny.gov>
Sent: Monday, December 6, 2021 3:35 PM
To: Garbarini, Doug; Singerman, Joel
Cc: Eaton, Daniel J (DEC); Miller, John Y (DEC); Deyette, Scott (DEC)
Subject: RE: Grid's 11/12/21 presentation

Hi Doug – We checked with Grid. The only availability with Grid's and DEC's team is: Monday, 12/20 9:30-11:30 am or 3-4 pm. How does that look for your team? Nothing available next week.

Thx,
Janet

From: Garbarini, Doug <Garbarini.Doug@epa.gov>
Sent: Friday, December 3, 2021 2:32 PM
To: Brown, Janet E (DEC) <janet.brown@dec.ny.gov>; Singerman, Joel <Singerman.Joel@epa.gov>
Cc: Eaton, Daniel J (DEC) <daniel.eaton@dec.ny.gov>; Miller, John Y (DEC) <john.miller@dec.ny.gov>; Deyette, Scott (DEC) <scott.deyette@dec.ny.gov>
Subject: RE: Grid's 11/12/21 presentation

Hi Janet

We can now also make Tuesday Dec 14 1-3 if that helps.

Doug

From: Brown, Janet E (DEC) <janet.brown@dec.ny.gov>
Sent: Thursday, December 02, 2021 7:58 AM
To: Singerman, Joel <Singerman.Joel@epa.gov>; Garbarini, Doug <Garbarini.Doug@epa.gov>
Cc: Eaton, Daniel J (DEC) <daniel.eaton@dec.ny.gov>; Miller, John Y (DEC) <john.miller@dec.ny.gov>; Deyette, Scott (DEC) <scott.deyette@dec.ny.gov>
Subject: RE: Grid's 11/12/21 presentation

We will check with Grid's team on this timeslot.

From: Singerman, Joel <Singerman.Joel@epa.gov>
Sent: Wednesday, December 1, 2021 4:06 PM
To: Brown, Janet E (DEC) <janet.brown@dec.ny.gov>; Garbarini, Doug <Garbarini.Doug@epa.gov>
Cc: Eaton, Daniel J (DEC) <daniel.eaton@dec.ny.gov>; Miller, John Y (DEC) <john.miller@dec.ny.gov>; Deyette, Scott (DEC) <scott.deyette@dec.ny.gov>
Subject: RE: Grid's 11/12/21 presentation

Wed, 12/15, from 2:00 – 3:00 pm, is now available and preferred.

From: Brown, Janet E (DEC) <janet.brown@dec.ny.gov>
Sent: Wednesday, December 1, 2021 12:33 PM
To: Singerman, Joel <Singerman.Joel@epa.gov>; Garbarini, Doug <Garbarini.Doug@epa.gov>
Cc: Eaton, Daniel J (DEC) <daniel.eaton@dec.ny.gov>; Miller, John Y (DEC) <john.miller@dec.ny.gov>; Deyette, Scott (DEC) <scott.deyette@dec.ny.gov>
Subject: RE: Grid's 11/12/21 presentation

thx

From: Singerman, Joel <Singerman.Joel@epa.gov>
Sent: Wednesday, December 1, 2021 11:48 AM
To: Brown, Janet E (DEC) <janet.brown@dec.ny.gov>; Garbarini, Doug <Garbarini.Doug@epa.gov>
Cc: Eaton, Daniel J (DEC) <daniel.eaton@dec.ny.gov>; Miller, John Y (DEC) <john.miller@dec.ny.gov>; Deyette, Scott (DEC) <scott.deyette@dec.ny.gov>
Subject: RE: Grid's 11/12/21 presentation

For a follow up meeting, 2-3:30 pm on 12/13 works best for EPA and Jacobs.

From: Brown, Janet E (DEC) <janet.brown@dec.ny.gov>
Sent: Tuesday, November 30, 2021 2:15 PM
To: Garbarini, Doug <Garbarini.Doug@epa.gov>
Cc: Eaton, Daniel J (DEC) <daniel.eaton@dec.ny.gov>; Miller, John Y (DEC) <john.miller@dec.ny.gov>; Deyette, Scott (DEC) <scott.deyette@dec.ny.gov>; Singerman, Joel <Singerman.Joel@epa.gov>
Subject: FW: Grid's 11/12/21 presentation

Hi Doug – See below responses in red, along with requested info attd. Feel free to give me a call if you'd like to discuss further.

Thx,
Janet

From: Garbarini, Doug <Garbarini.Doug@epa.gov>
Sent: Monday, November 29, 2021 10:39 AM
To: Brown, Janet E (DEC) <janet.brown@dec.ny.gov>; Singerman, Joel <Singerman.Joel@epa.gov>
Cc: Eaton, Daniel J (DEC) <daniel.eaton@dec.ny.gov>; Miller, John Y (DEC) <john.miller@dec.ny.gov>; Deyette, Scott (DEC) <scott.deyette@dec.ny.gov>
Subject: RE: Grid's 11/12/21 presentation

Hi Janet

Two things.

I believe that Grid was going to get us the info they used for the benzene in groundwater figure that they presented; that figure included data from 2016 that EPA and DEC had not seen before. National Grid recently submitted an off-site investigation report for the Citizens Site which is attached for reference. The report summarizes a compilation of off-site soil and groundwater data. Much of this data is from the original 2005 RI but the report also includes supplemental data from as recently as 2015. In addition, please see attached excel data table that Grid used as the basis for the benzene gw figure.

The NYSDEC shares the same concern as EPA regarding the basis for this groundwater figure. From review of the off-site investigation report it was observed that two of the pertinent wells, CGMW-24 and CGMW-25 were listed as "not sampled". Grid indicated that those wells were unable to be sampled due to insufficient groundwater being present in the well. Therefore, the DEC has requested additional off-site sampling to inform current gw conditions. National Grid is proposing to over drill/replace monitoring well CGMW-25 and re-sample. Note that this well is located across Smith Street from Parcel I and its data will help to address EPA's concern about shallow groundwater in this area. This work has not been scheduled yet, but will be completed in the near future.

Additionally, the 2016 supplemental design investigation report is available at the following link on DEC's DIL website. https://www.dec.ny.gov/data/DecDocs/C224012/

Also, I was thinking that it would make sense for us to check calendars and perhaps block some time for a potential meeting the week after next. Seems that given how difficult it is go get time on calendars, we should seek to block a couple of hours in case we need it. Thoughts? Based on DER staff schedules, we are only available on Mon-Wed (12/13-12/15) for potential meeting times – see specifics below. I've asked Grid to provide their availability as well. Let us know your team's availability, so we can release some of the hold times for folks.

As a heads up, as I mentioned in our last conversation, there was a possibility that DEC was going to request formal written concurrence on EPA's specific concerns as the concerns seem to be evolving during our discussions over time. We briefed Mike and Sue last week, and they have directed us to draft a letter to EPA (from Sue to Pat E) to that effect to get formal consensus. That letter is being prepared now. Depending on timing, the teams may or may not be in a position to continue discussions in the below timeframe.

DER availability:
Monday, 12/13: 8-10 am, 11am- 1pm, 2-3:30 pm
Tuesday, 12/14: 8 am- 3:30 pm
Wed, 12/15: 8-10 am and 2-3:30 pm

Thanks

Doug

From: Brown, Janet E (DEC) <janet.brown@dec.ny.gov>
Sent: Monday, November 22, 2021 9:37 AM
To: Garbarini, Doug <Garbarini.Doug@epa.gov>; Singerman, Joel <Singerman.Joel@epa.gov>
Cc: Eaton, Daniel J (DEC) <daniel.eaton@dec.ny.gov>; Miller, John Y (DEC) <john.miller@dec.ny.gov>; Deyette, Scott (DEC) <scott.deyette@dec.ny.gov>
Subject: Grid's 11/12/21 presentation

Hi Doug and Joel,

As requested, attached is Grid's 11/12/21 presentation. Please let us know if you need anything further.

Thx,
Janet

ARCADIS

Citizens MGP Site Remedy

November 12, 2021

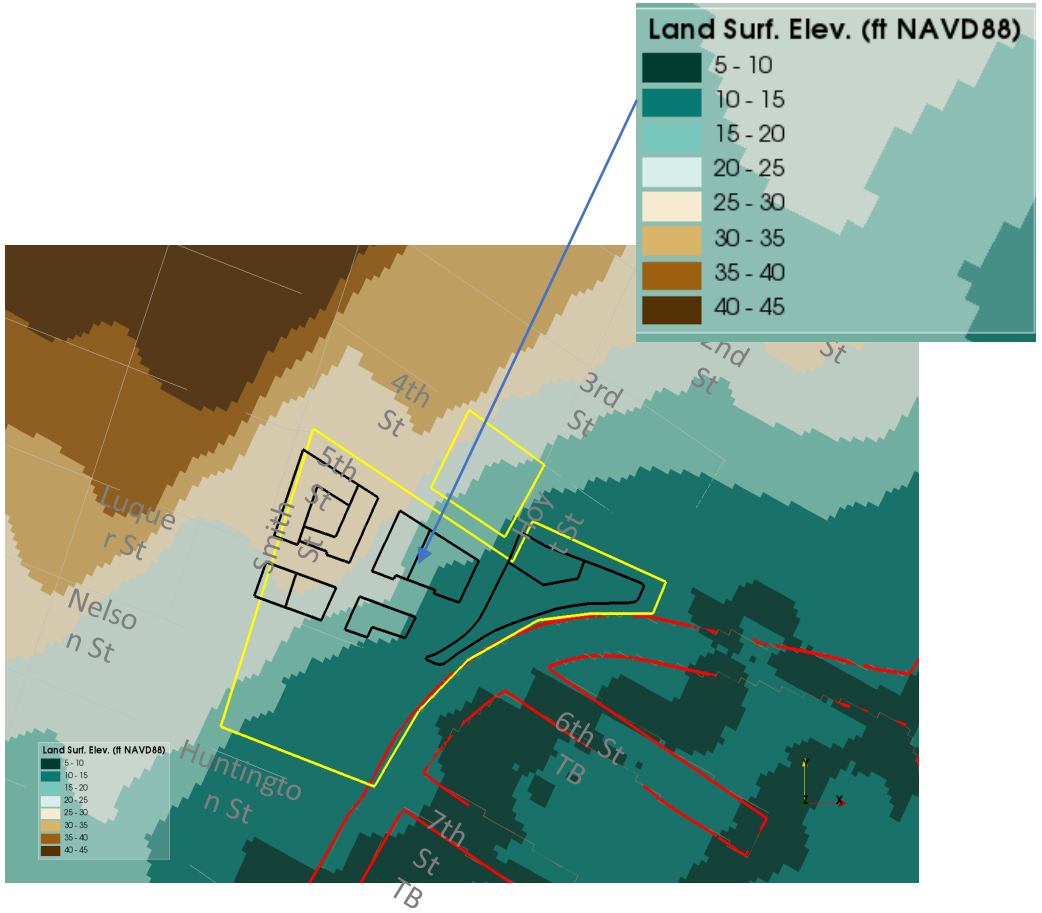
Proposed Redevelopment

- Expected floor elevations will be above 100 yr flood elevation (School Ground Fl El. +17.0')
- Citizens hydraulic relief system mitigates groundwater mounding at the Site
- Simulated post-remediation groundwater elevations are approx. 9 feet lower than floor elevations of occupied spaces
- Property owners and developers are part of Brownfield Site Cleanup Agreement with NYSDEC
- Site Management Plan will address post-remediation ground-intrusive work

Land elevations

- Expected floor elevations will be above 100 yr flood elevation (School Ground Fl El. +17.0')

- Model simulations have used 10 to 20 feet land surface elevations

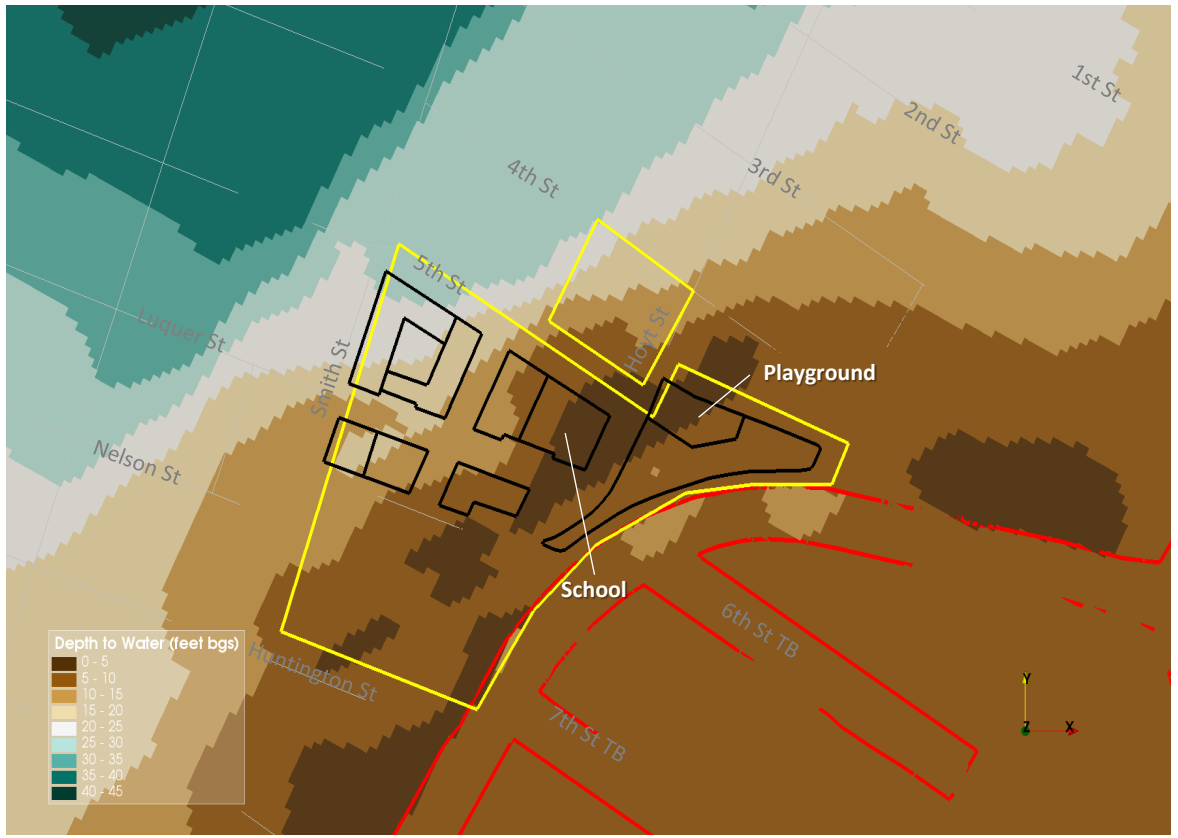


Jacobs

Mounding

- Citizens hydraulic relief system mitigates groundwater mounding at the Site

- Arcadis design addendum states that its intent is to relieve groundwater mounding “in the immediate vicinity of the wall”
- Groundwater model output show the limited dewatering extent of drain which is more in the playground area



Jacobs

Proposed Redevelopment

- Typically, SVI not an issue at MGP sites – aligns with RI soil gas data
- Vapor mitigation systems to be proactively integrated into building construction
- Property owners and developers are signatories to Brownfield Site Cleanup Agreements with NYSDEC
- Developers legally required to comply with provisions of Site Management Plan

Regulatory Toxicology and Pharmacology 59 (2011) 353–359

Contents lists available at ScienceDirect

Regulatory Toxicology and Pharmacology

journal homepage: www.elsevier.com/locate/yrtph

Risk characterization of vapor intrusion in former manufactured gas plant sites

Robin B. DeHate [a,b,*], Giffe T. Johnson [a], Raymond D. Harbison [a]

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[b] GEI Consultants Inc., Valrico, FL, United States

ARTICLE INFO

Article history:
Received 15 June 2010
Available online 10 December 2010

Keywords:
Soil vapor intrusion
Volatile organic compounds
Risk assessment
Benzene

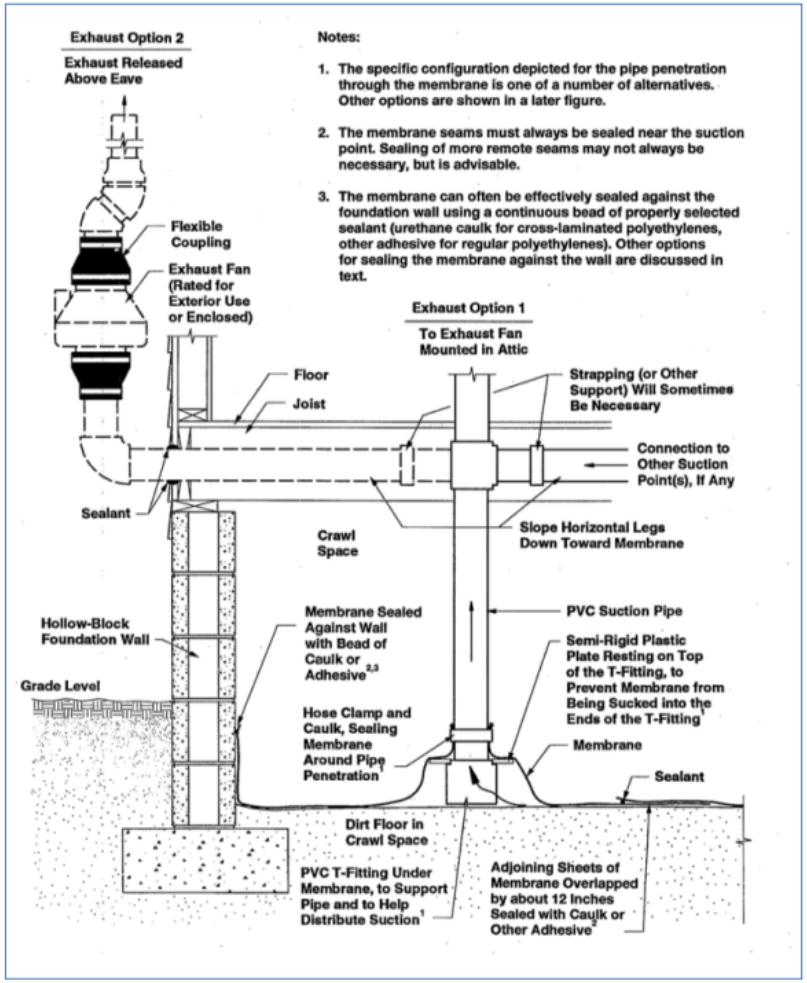
ABSTRACT

Soil vapor intrusion (SVI) has recently garnered much interest as a potential exposure route for occupants of properties overlying and surrounding former Manufactured Gas Plants (MGPs). This investigation evaluates SVI at 10 commercial buildings and 26 single family and multi-family residential properties overlying and/or adjacent to three former MGPs. SVI was evaluated in three categories according to thickness of the vadose zones: no vadose zone; 0–6 feet thick, and 6–25 feet thick. Indoor and outdoor air, and soil vapor samples were analyzed for volatile organic compounds (VOCs). Comparative risks were evaluated based on maximum and mean concentrations for benzene, toluene, ethylbenzene, and xylenes relative to background levels. All calculated Hazard Indices were less than 1 or were comparable to mean and maximum background levels. Cancer risks for exposure to benzene ranged from 9.75×10^{-6} to 4.52×10^{-4}. Comparative background cancer risk from benzene exposure not related to former MGP sites ranged from 9.9×10^{-6} to 3.59×10^{-3}. The results did not identify evidence of MGP-related soil vapor intrusion from any of the 36 sites. No increased public health risks were associated with occupied residential or commercial properties overlying or surrounding MGPs.

Subslab ventilation?

- Expected floor elevations will be above 100 yr flood elevation (School Ground Fl El. +17.0')

- Finished floor elevations do not account for subslab ventilation systems which will be deeper and need unsaturated conditions to operate effectively
- Should a target depth of groundwater be set if these type of systems are to be used.



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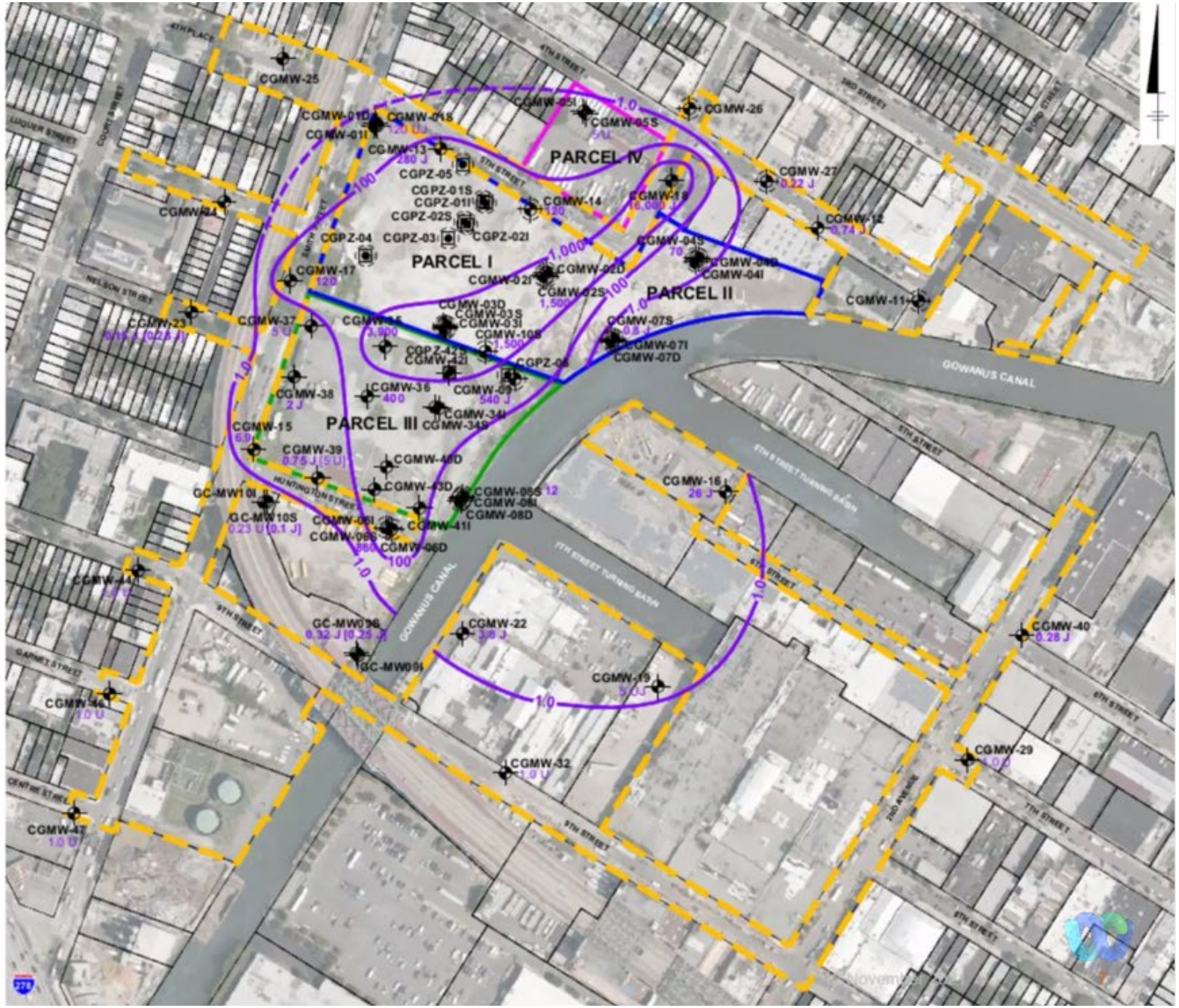
II. Groundwater

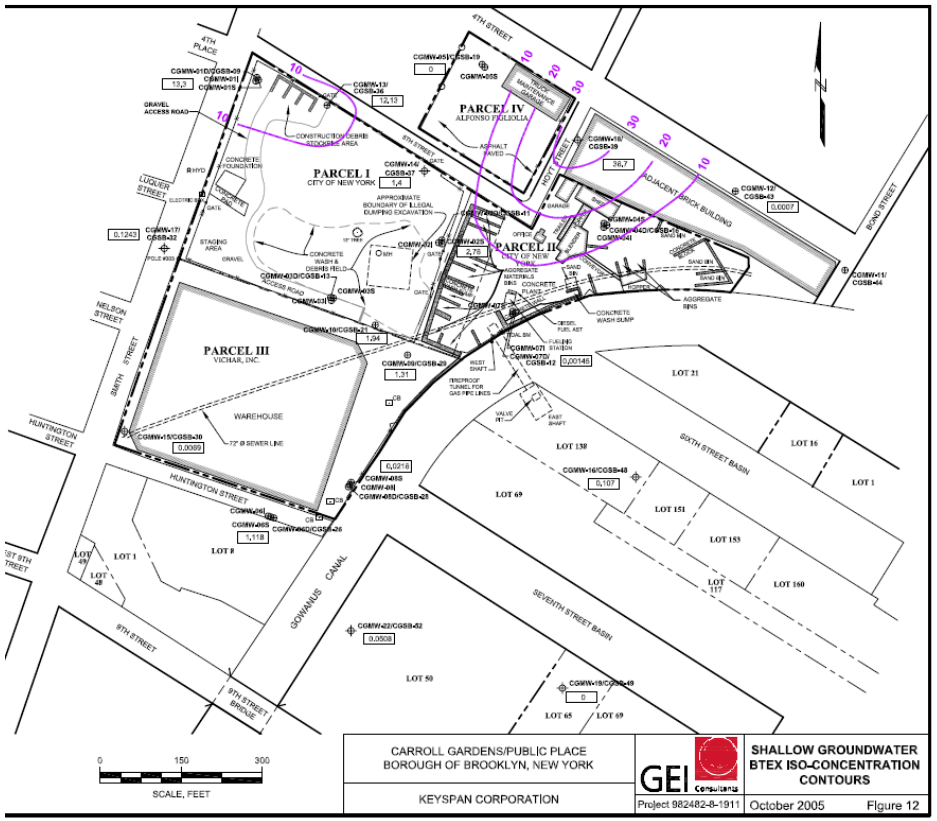
Dissolved-Phase Benzene Concentrations in Shallow Groundwater



LEGEND:

- LIMIT OF BROWNFIELD CLEANUP PROGRAM SITE NO. C224012 (PARCELS I AND II)
- LIMIT OF BROWNFIELD CLEANUP PROGRAM SITE NO. C224012B (PARCEL II)
- LIMIT OF STATE SUPERFUND SITE NO. 224012 (PARCEL IV)
- APPROXIMATE LIMIT OF OFF-SITE INVESTIGATION AREA
- PROPERTY LINE (APPROXIMATE)
- CGPZ-42S — EXISTING PIEZOMETER
- CGPZ-01S — FORMER PIEZOMETER
- CGMW-17 — EXISTING MONITORING WELL
- CGMW-02S — FORMER MONITORING WELL
- 1.0 — SHALLOW GROUNDWATER BENZENE CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
- 1.0 — INTERPOLATED SHALLOW GROUNDWATER BENZENE ISOCONCENTRATION CONTOUR (µg/L) (DASHED WHERE INFERRED)

Shallow Groundwater BTEX from RI



- Concentration are in mg/L not µg/L like the presentation figure
- Maximum concentration on Arcadis figure is 16 mg/L (MW-18) but the contour interval is 1 mg/L
- Source of data is unknown
- RI concentration at MW-18 was 36 mg/L

Jacobs

Potential Exposure Considerations – Shallow Groundwater

- Site Setting
- Area History – Urban Fill & Environmental Sites
- Groundwater Not Being Used
- Incomplete Exposure Pathways
- SMP for Post-Remediation Ground Intrusive Work

RI groundwater Section

- *The completion of the RI, as documented in this RI report, has addressed these objectives with one exception. The assessment of the extent of off-site migration of BTEX, PAHs, and/or NAPL has not been completed.*

- RI states offsite nature and extent not established

Jacobs

RI Groundwater Use Section

- *There are no public or private water supply wells within a 3-mile radius of the property (Roux Associates, Inc., 1990). The NYSDEC Phase II Report prepared by Roux Associates, Inc. cites the New York State Department of Health (NYSDOH) New York State Atlas of Community Water Systems Sources 1982 as the source of this information. In addition, the report indicates that no groundwater within 3 miles of the site is used for irrigation purposes.*

- RI statements on groundwater use

Jacobs

2007 State Record of Decision

Assessment of the Site

Contamination identified during the Remedial Investigation of this site represents a threat to public health and the environment, requiring a remedial program as identified below.

Nature of contamination: The Remedial Investigation identified the presence of coal tar in subsurface soils in two areas of the former MGP: one area in and around gas holders 2 and 3 on Parcel II, and another near the tar handling structures on Parcel I and III. Contaminants of concern in the tar include polycyclic aromatic hydrocarbons (PAHs) and the volatile compounds benzene, toluene, ethylbenzene and xylene (BTEX).

Extent of contamination: Soil at the site is grossly impacted by coal tar from a depth of approximately 7 feet to 150 feet below ground surface. Site groundwater is impacted by PAHs and BTEX derived from the tar. Tar and groundwater contamination has spread off site, and has been found both in subsurface soils and in sediments in the Gowanus Canal. The full extent of off site contamination is still under investigation and will be addressed under a separate operable unit at a later time.

- The ROD states that offsite contamination is being addressed as a separate operable unit

Jacobs

May 2019 Fact Sheet

- *Additional delineation of contamination will be required at the off-site properties.*

- 2019 fact sheet statements are consistent with the ROD

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Vertical Gradients, Upper Glacial Aquifer – Mid Tide Between Model Layers 6 and 7

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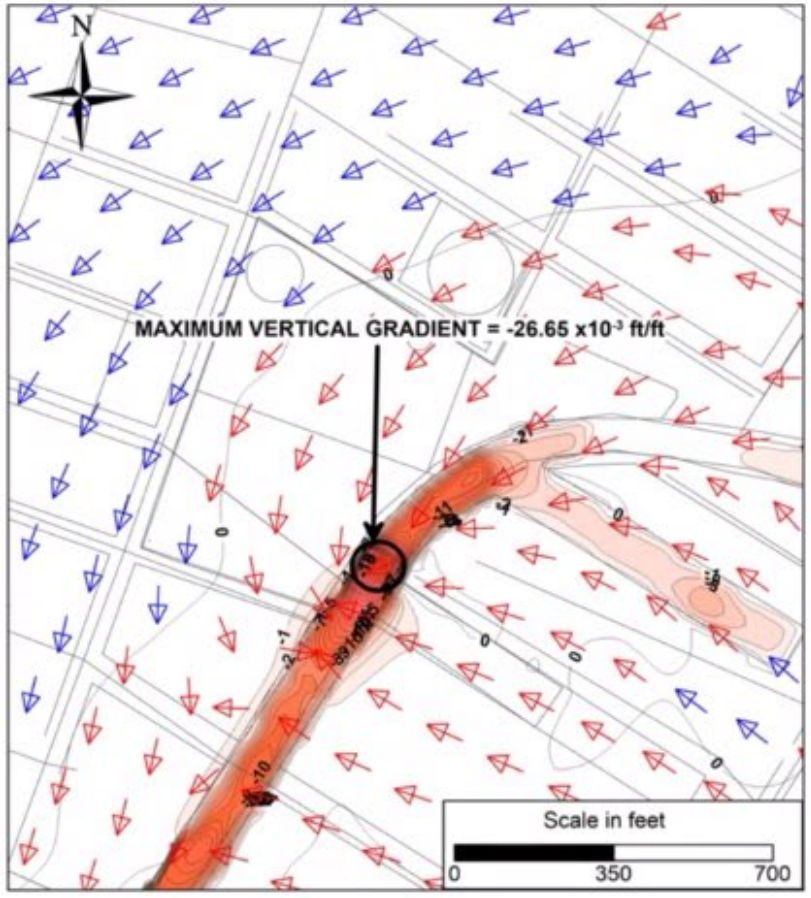
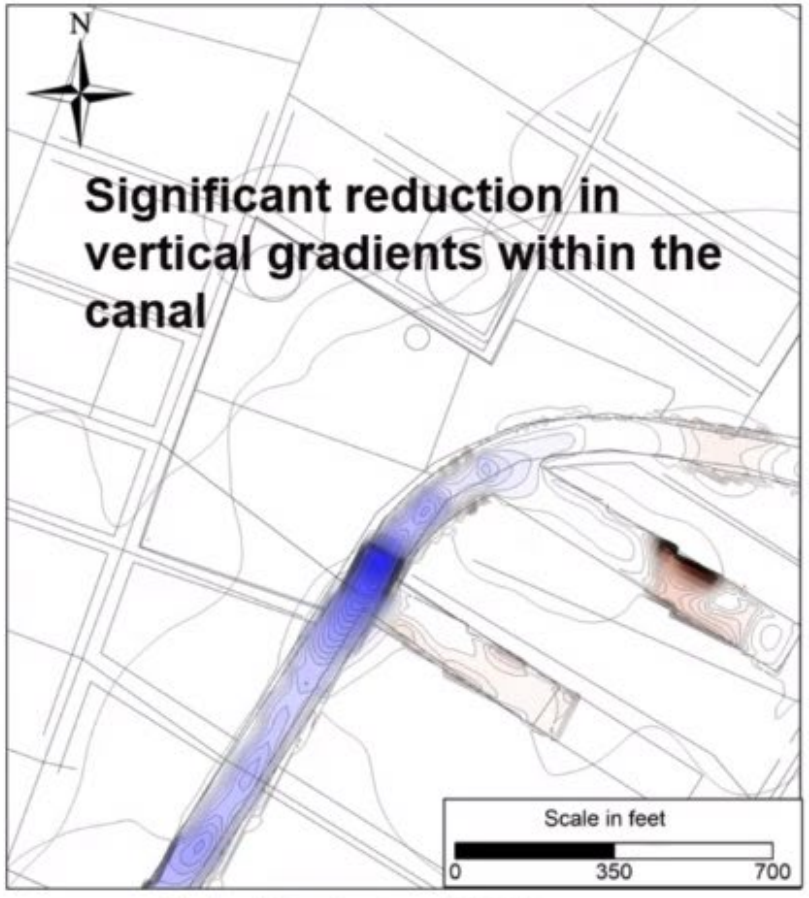
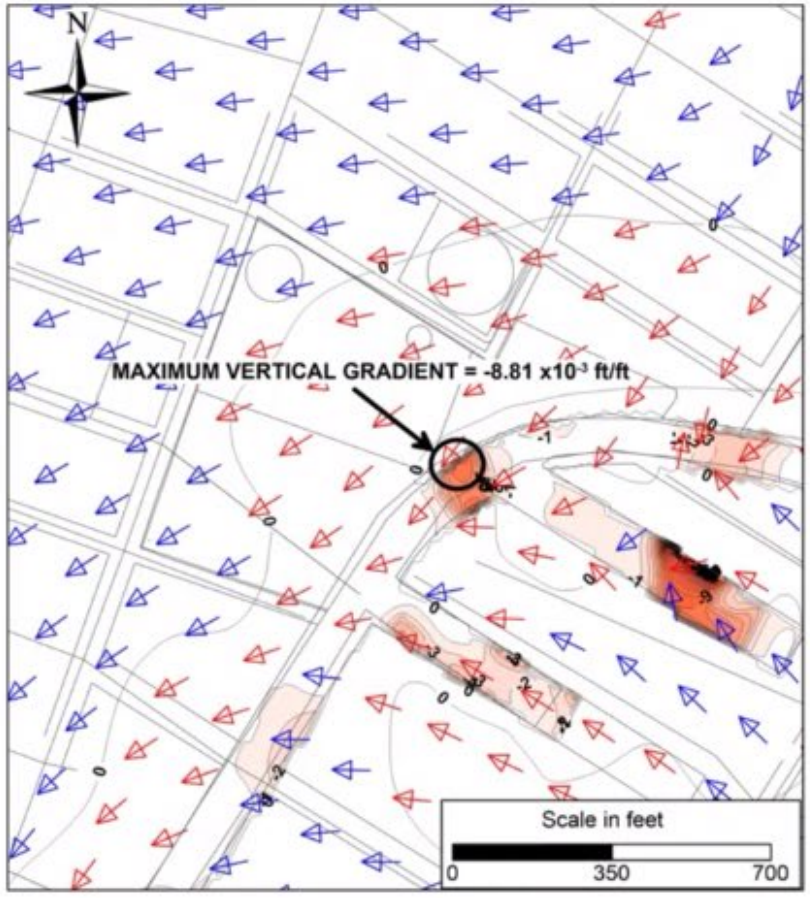
Pre-Remediation Conditions



Gradient Changes



Post-Canal Remediation Conditions



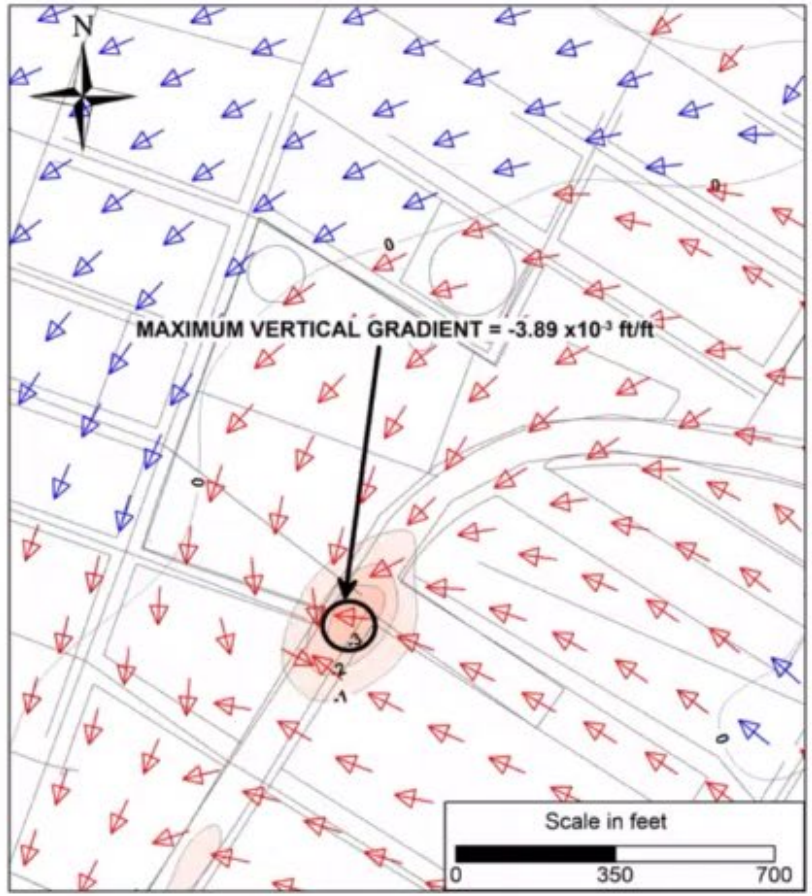
Vertical Gradients x 10^{-3} ft/ft

(e.g., vertical gradient of -30 on figure corresponds to vertical gradient of -0.03 ft/ft)

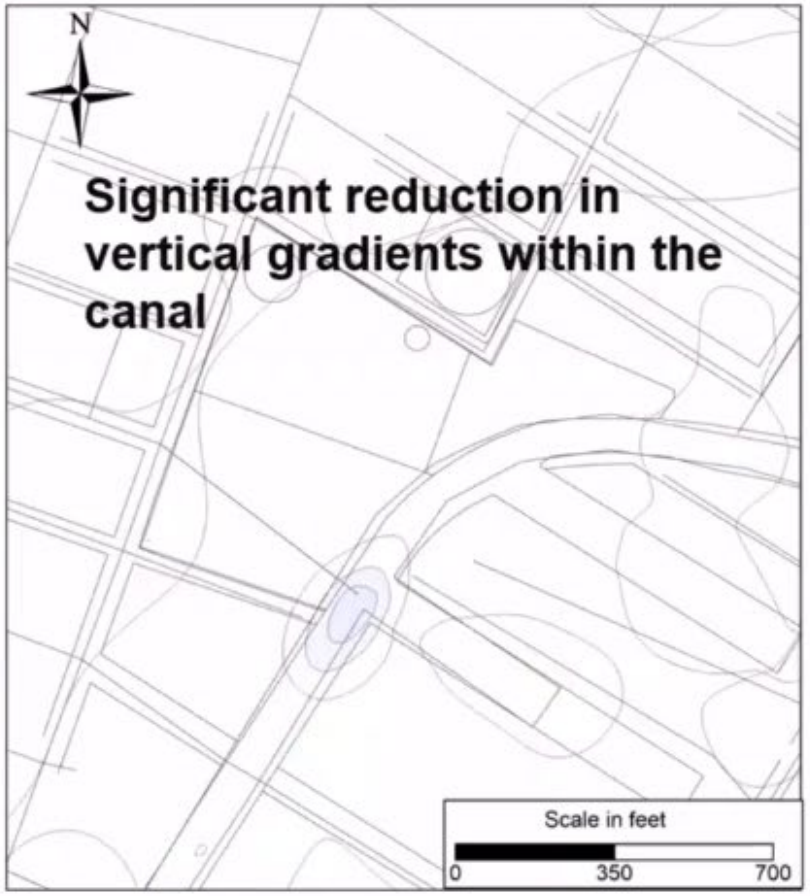
Vertical Gradients, Upper Glacial Aquifer – Mid Tide Between Model Layers 7 and 8

ARCADIS

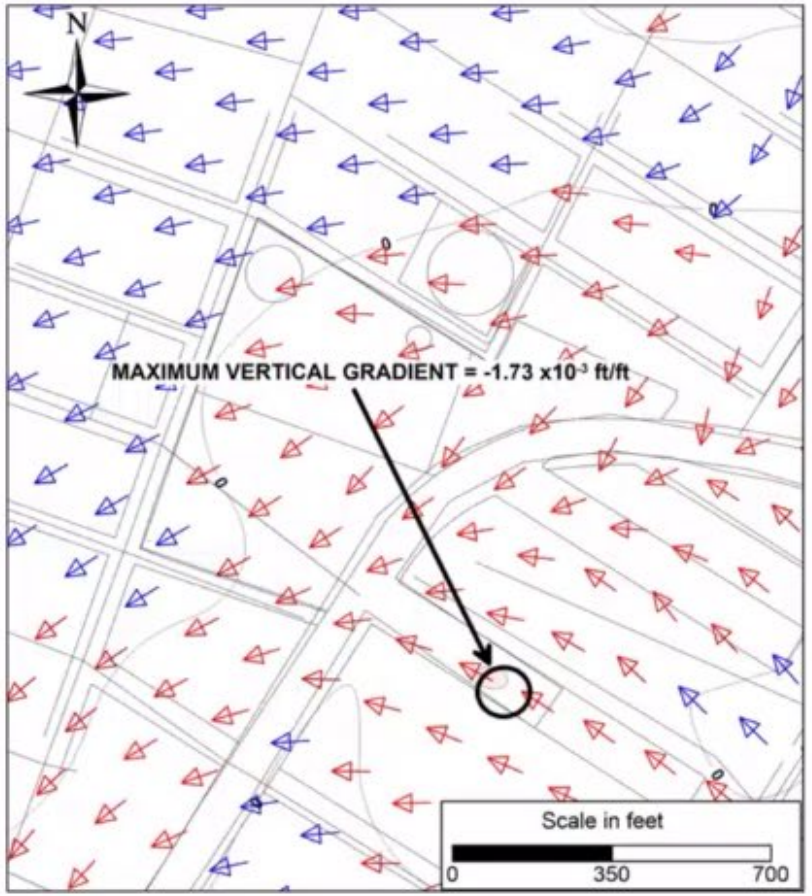
Pre-Remediation Conditions



Gradient Changes



Post-Canal Remediation Conditions



Vertical Gradients x 10^{-3} ft/ft

(e.g., vertical gradient of -30 on figure corresponds to vertical gradient of -0.03 ft/ft)

Canal Mass Discharge Estimates

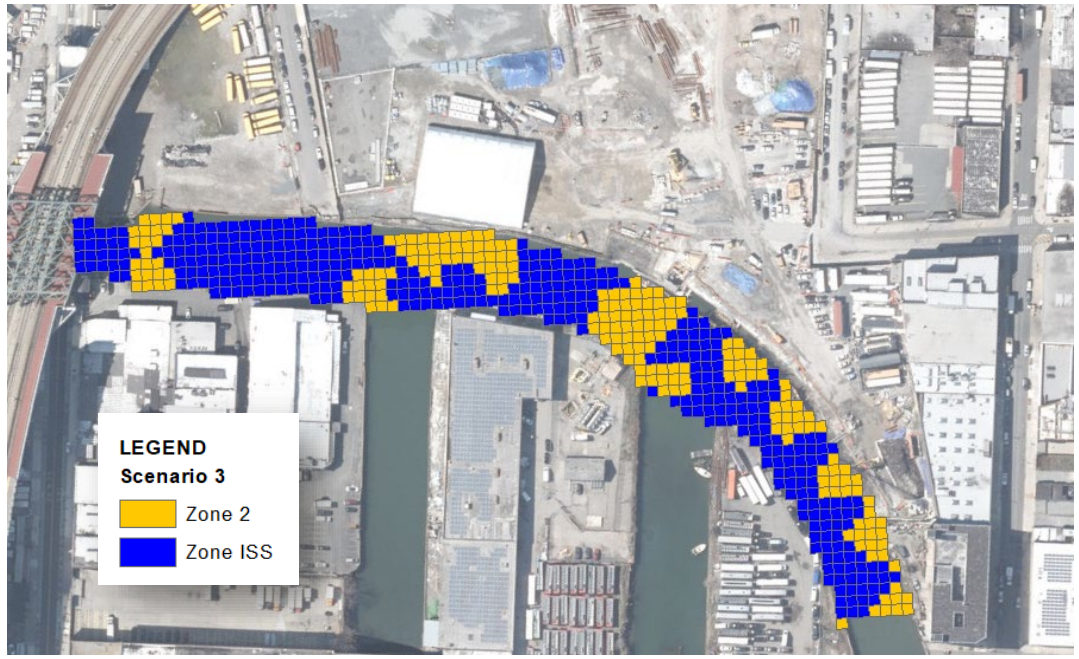
- The groundwater models are used to estimate PAH flux to the canal for cap design
- These estimates can show how much PAH mass currently discharged to the canal is redirected to the surrounding aquifers

- Scenarios
  - Baseline (RTA_65)
  - EPA directed ISS areas (Scenario 3)
    - With and without groundwater pumping
  - RP proposed ISS areas (Scenario 4)

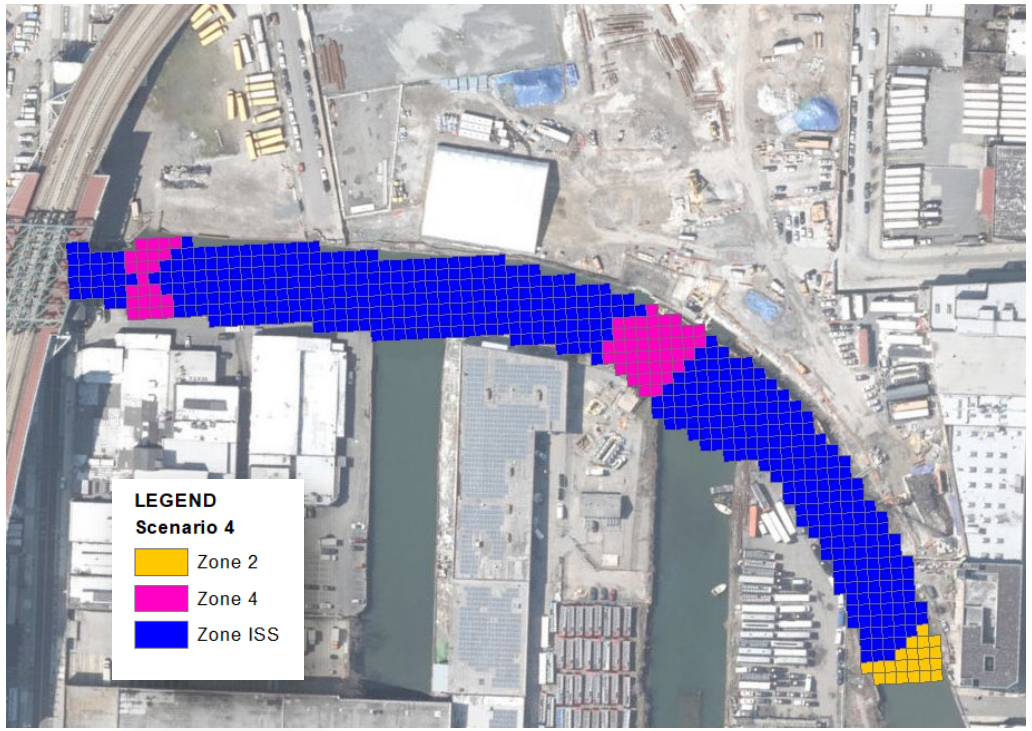
Jacobs

ISS Areas near Citizens

EPA Directed ISS Areas (Scenario 3)



RP proposed ISS Area (Scenario 4)



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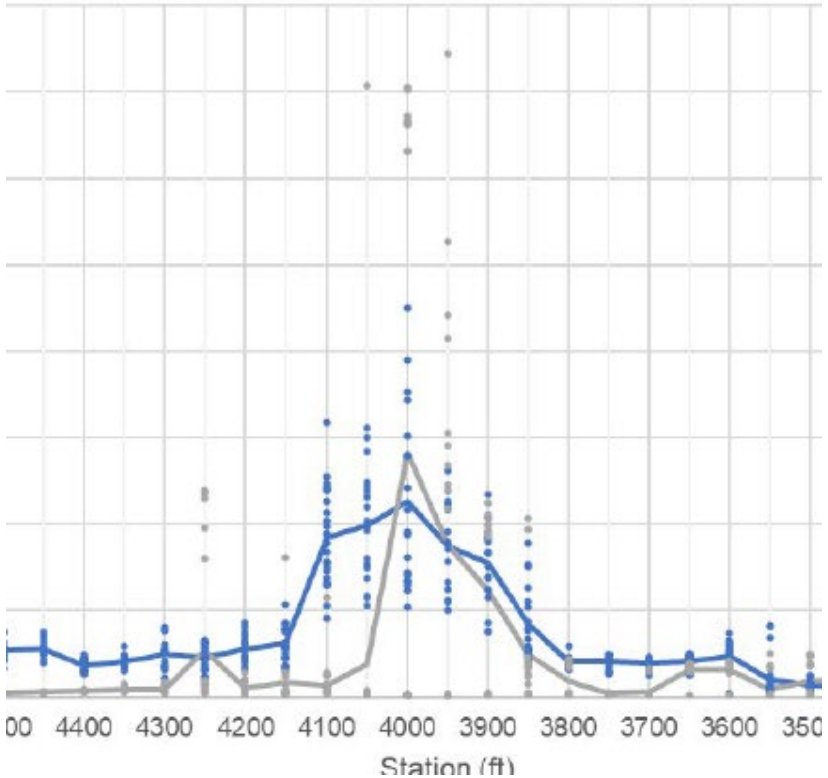
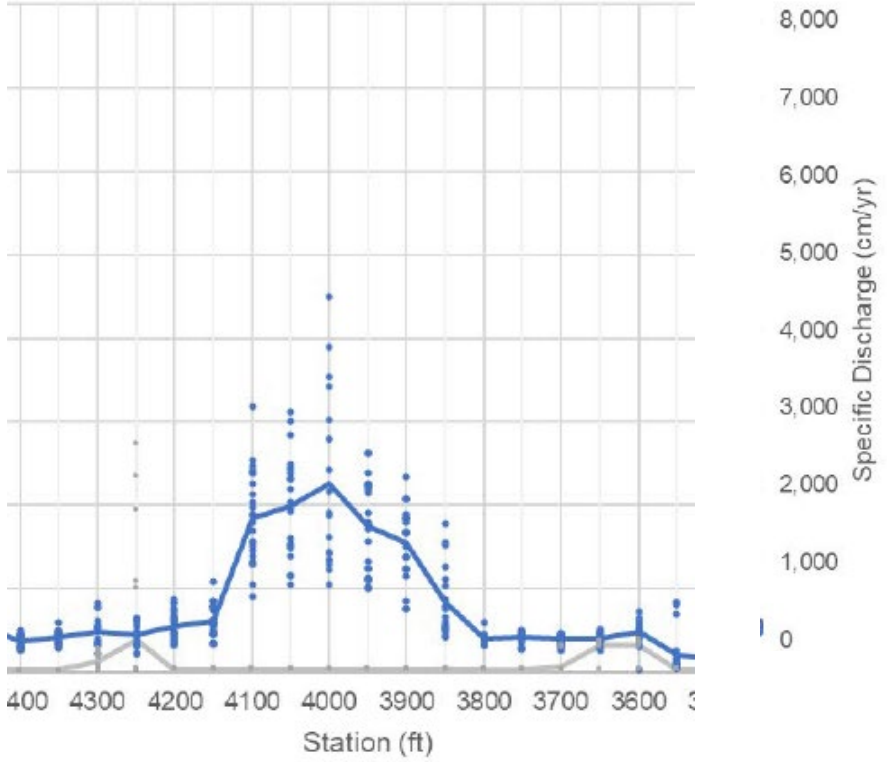
Groundwater Specific Discharge

EPA Directed ISS Areas (Scenario 3)



RP proposed ISS Area (Scenario 4)



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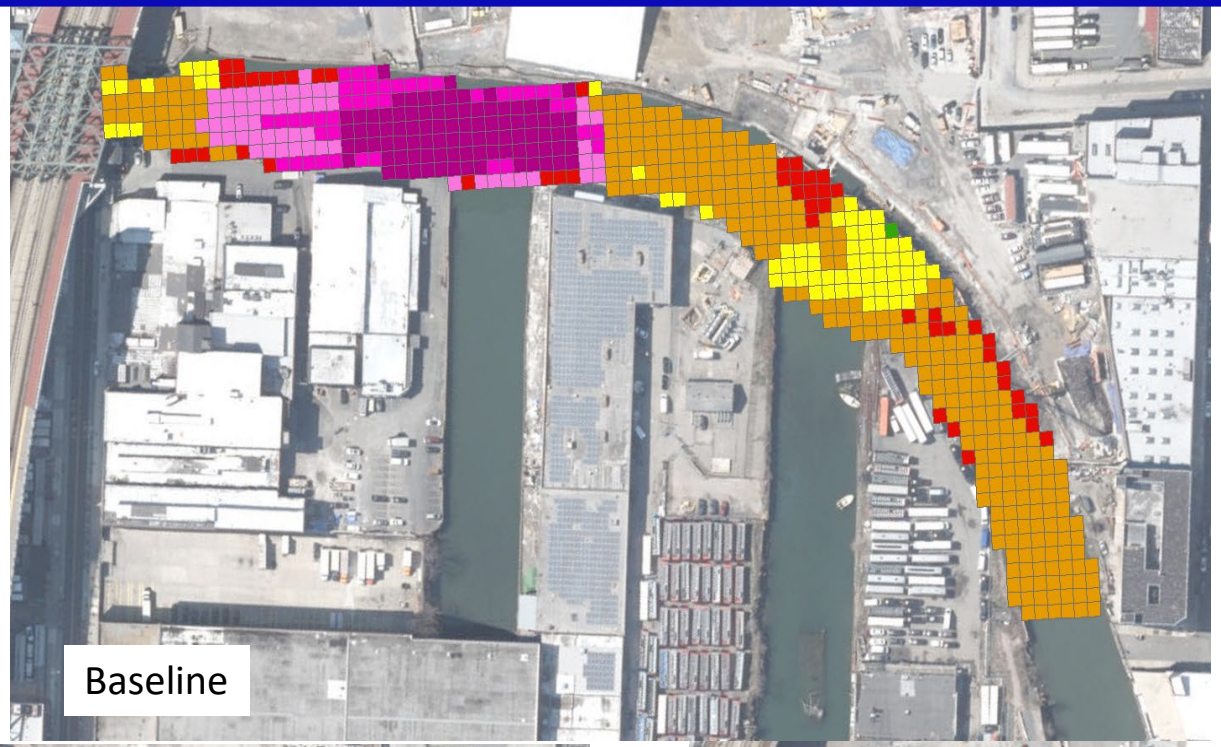
Total PAH Flux (mg/m2/year)

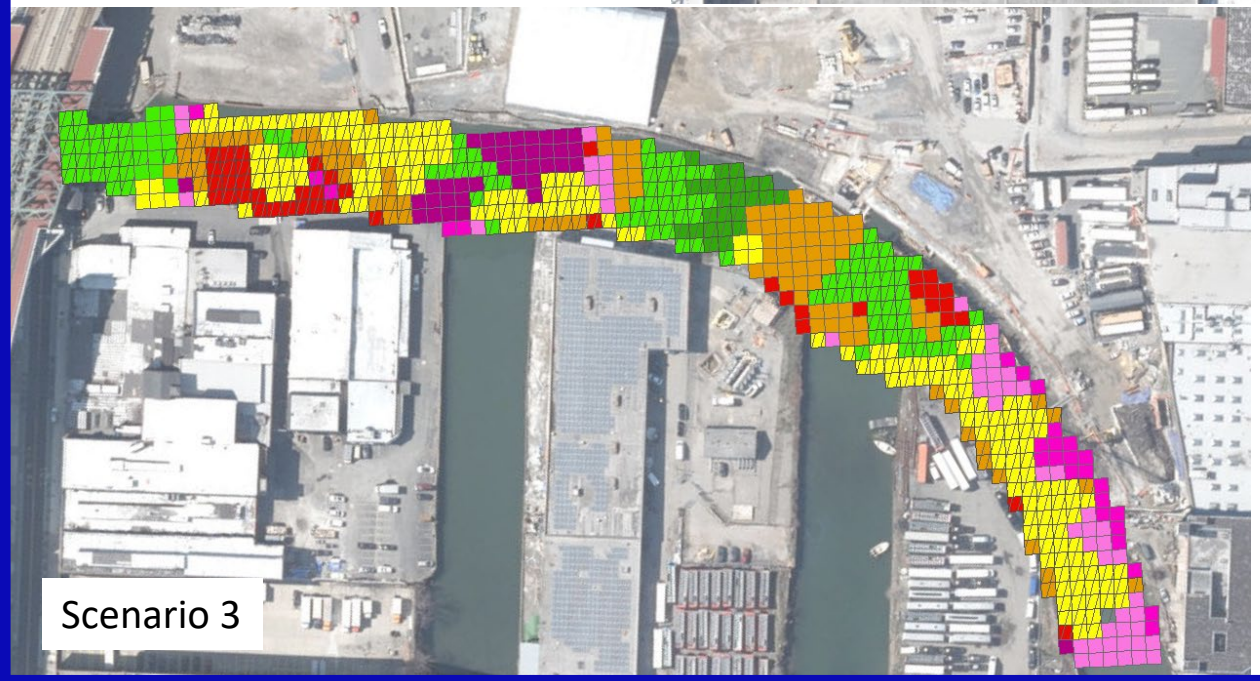
LEGEND

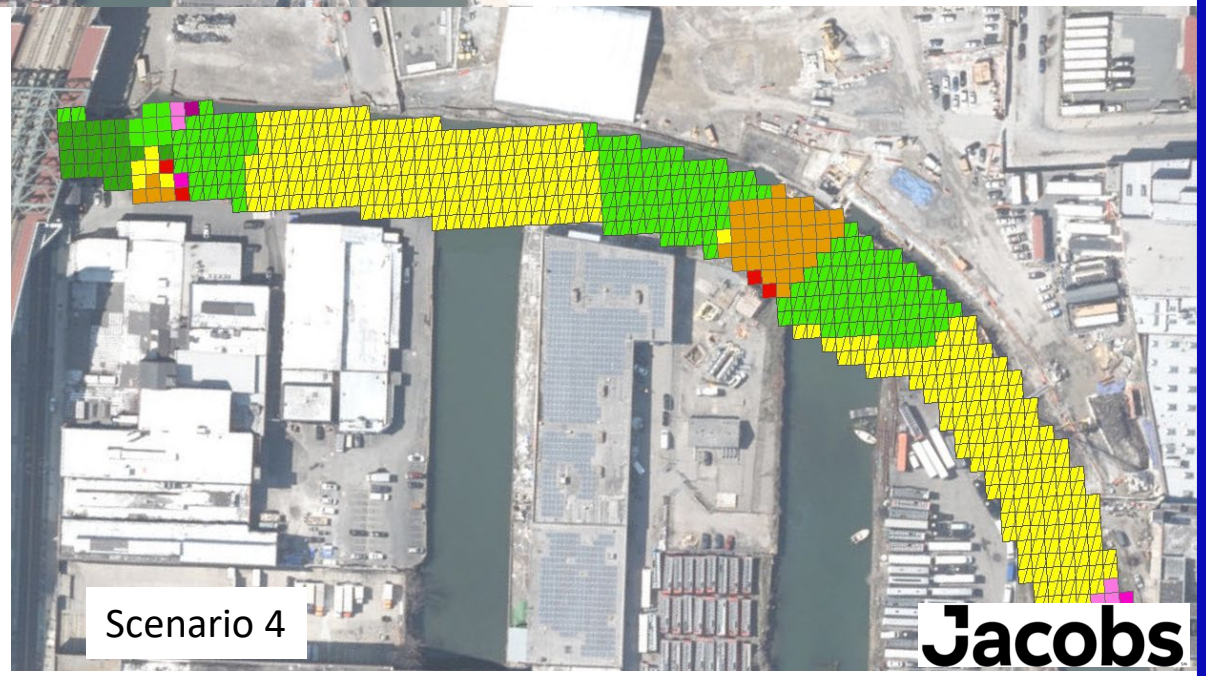
Total PAH Flux (mg/m ^{2}/year)

- Less than 1,000
- 1,000 to 5,000
- 5,000 to 10,000
- 10,000 to 25,000
- 25,000 to 50,000
- 50,000 to 100,000
- 100,000 to 250,000
- Greater than 250,000

Zone ISS







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- 70-inch dissolve phase treatment layers needed to treat the PAH flux in areas outside of the ISS areas

Zone 2 (70-in 40% GAC)

Zone ISS (4-in 16% GAC)

- RP Group concern thickness and proposed Scenario 4

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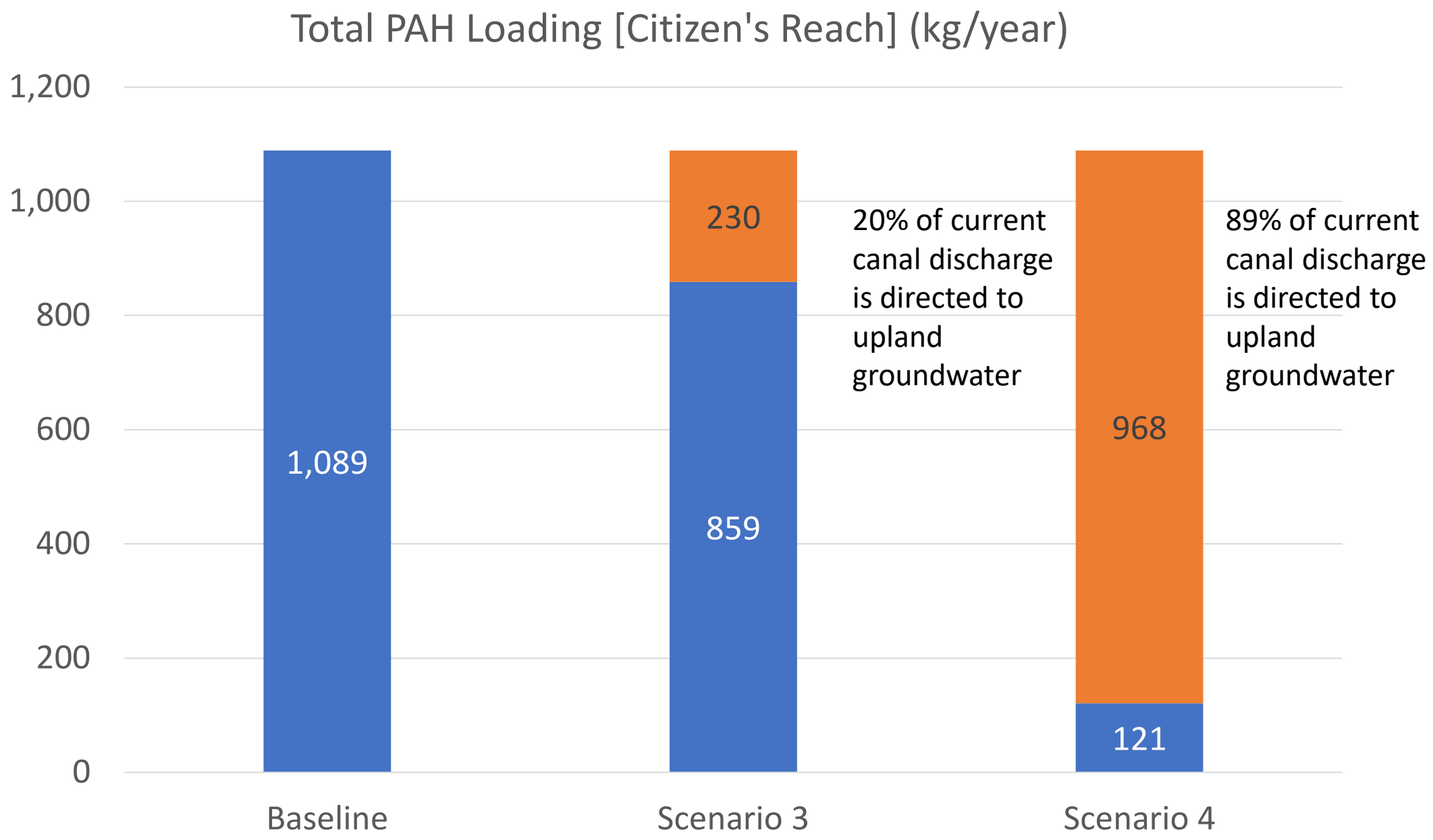

Total PAH Loading [Citizen's Reach] (kg/year)
1,200
1,000
800
600
400
200
0
1,089
230
859
968
121
20% of current canal discharge is directed to upland groundwater
89% of current canal discharge is directed to upland groundwater
Baseline
Scenario 3
Scenario 4

Jacobs

Groundwater Conclusions

Shallow Groundwater

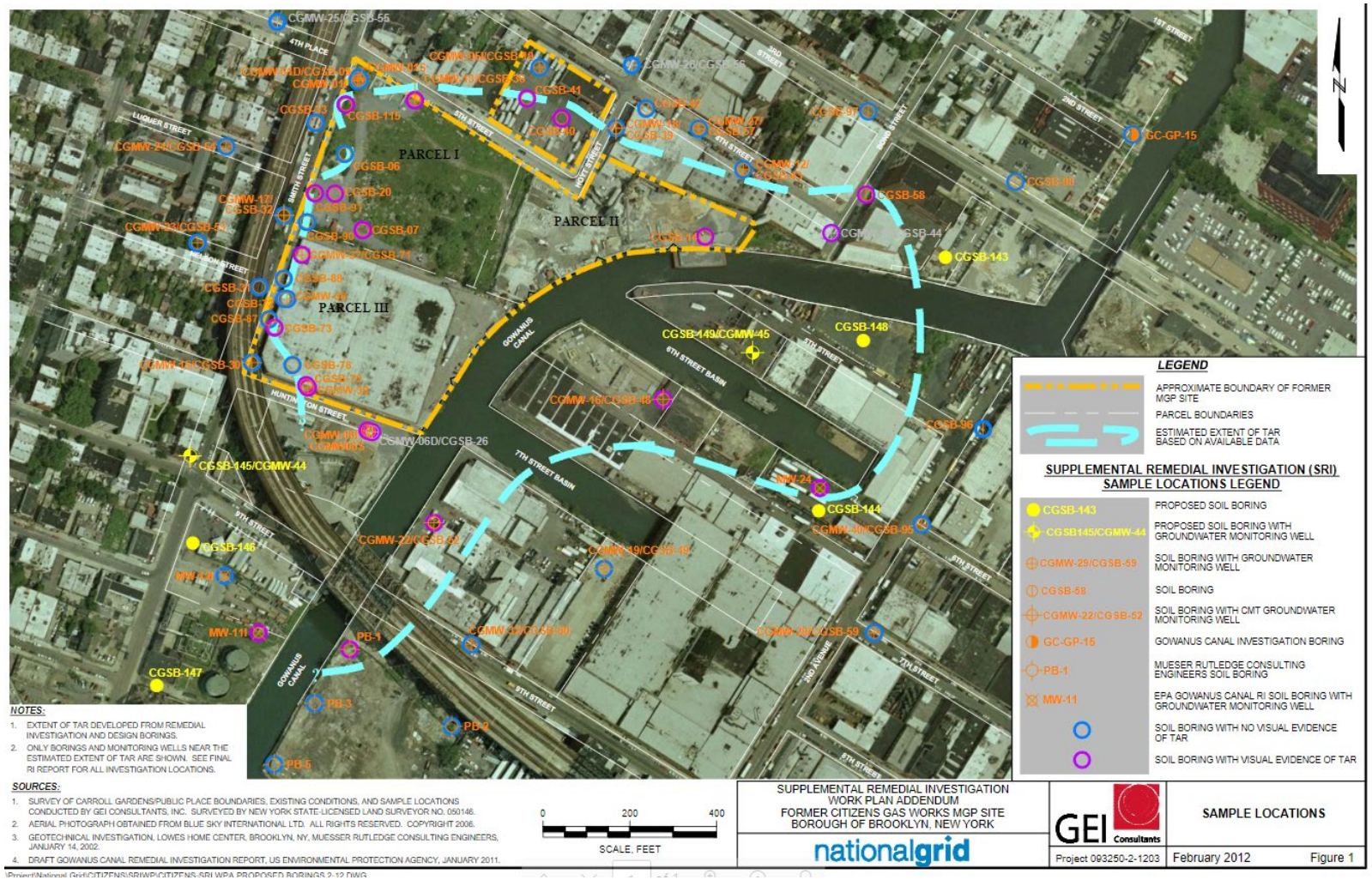
- Limited dissolved phase migration off site
- Decrease in horizontal gradient following Canal remedy
- Incomplete exposure pathway

Intermediate Groundwater

- ISS in RTA2 including area near 9th Street Bridge
- Decrease in intermediate groundwater vertical gradient (>50% reduction)
- Incomplete exposure pathway

III. NAPL

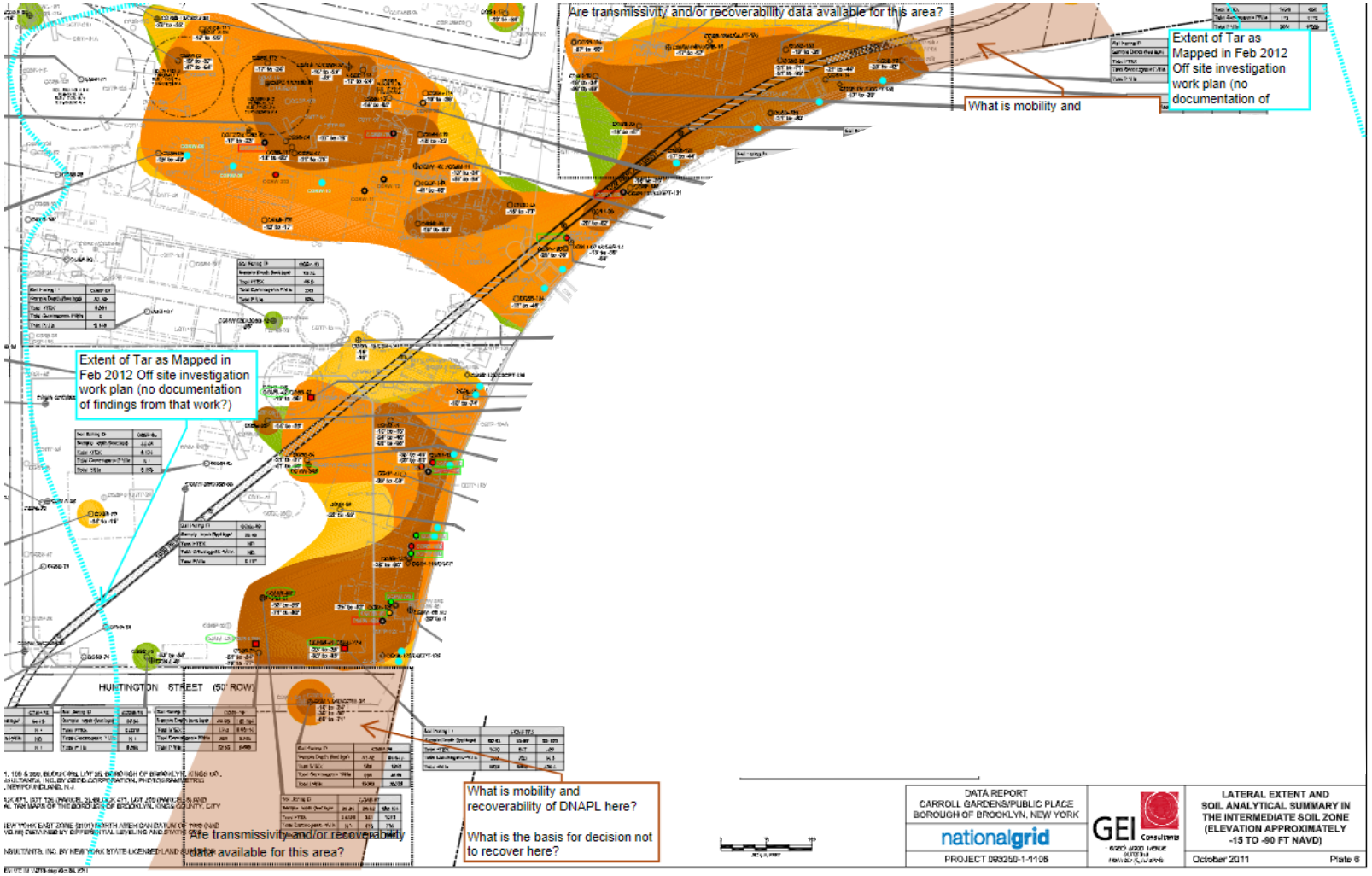
Extent of NAPL 2012



- NAPL extent much larger than the site boundary
- Is it stable at the boundaries?
- Is there NAPL movement within the NAPL body

Jacobs

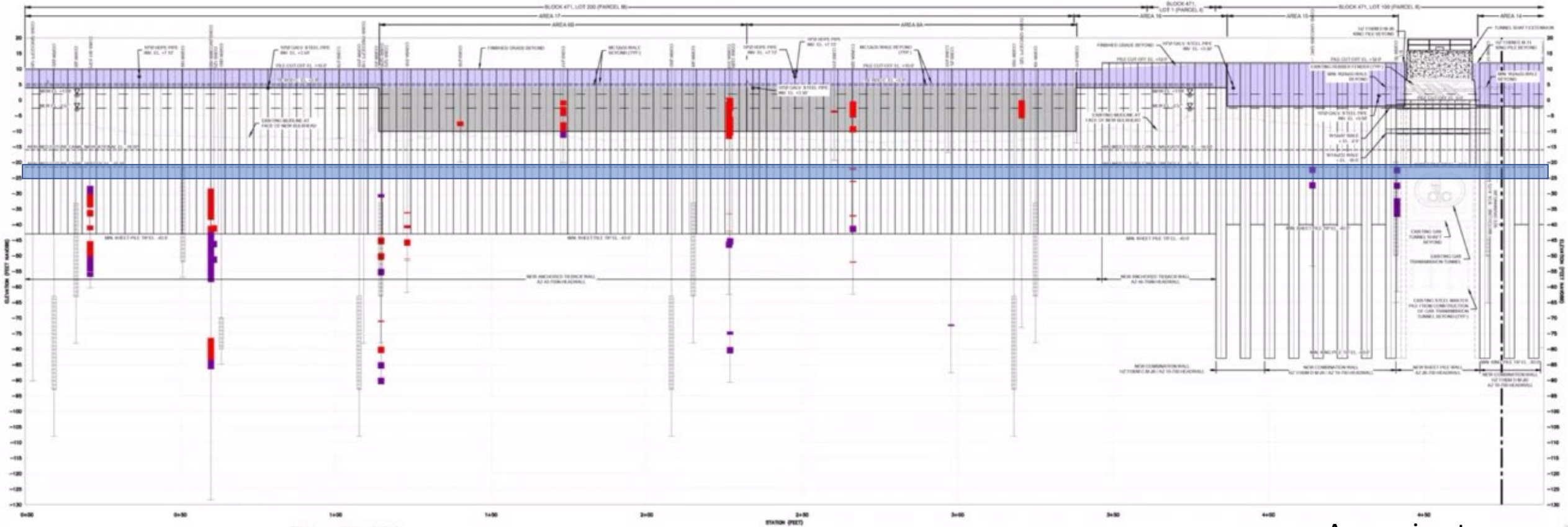
Intermediate Zone NAPL Impacts

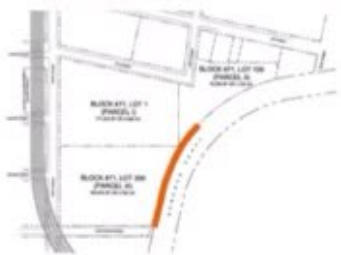


- What is DNAPL recoverability across the entire area
  - Property boundary areas most of a concern
- Recovery wells locations do not address entire NAPL area

Jacobs

Cross Section Along Citizens Bulkhead Barrier Wall





EXCAVATION AREA LEGEND:

REMEDIAL EXCAVATION AREA INCLUDED IN 100% REMEDIAL DESIGN REPORT (APPROXIMATE)

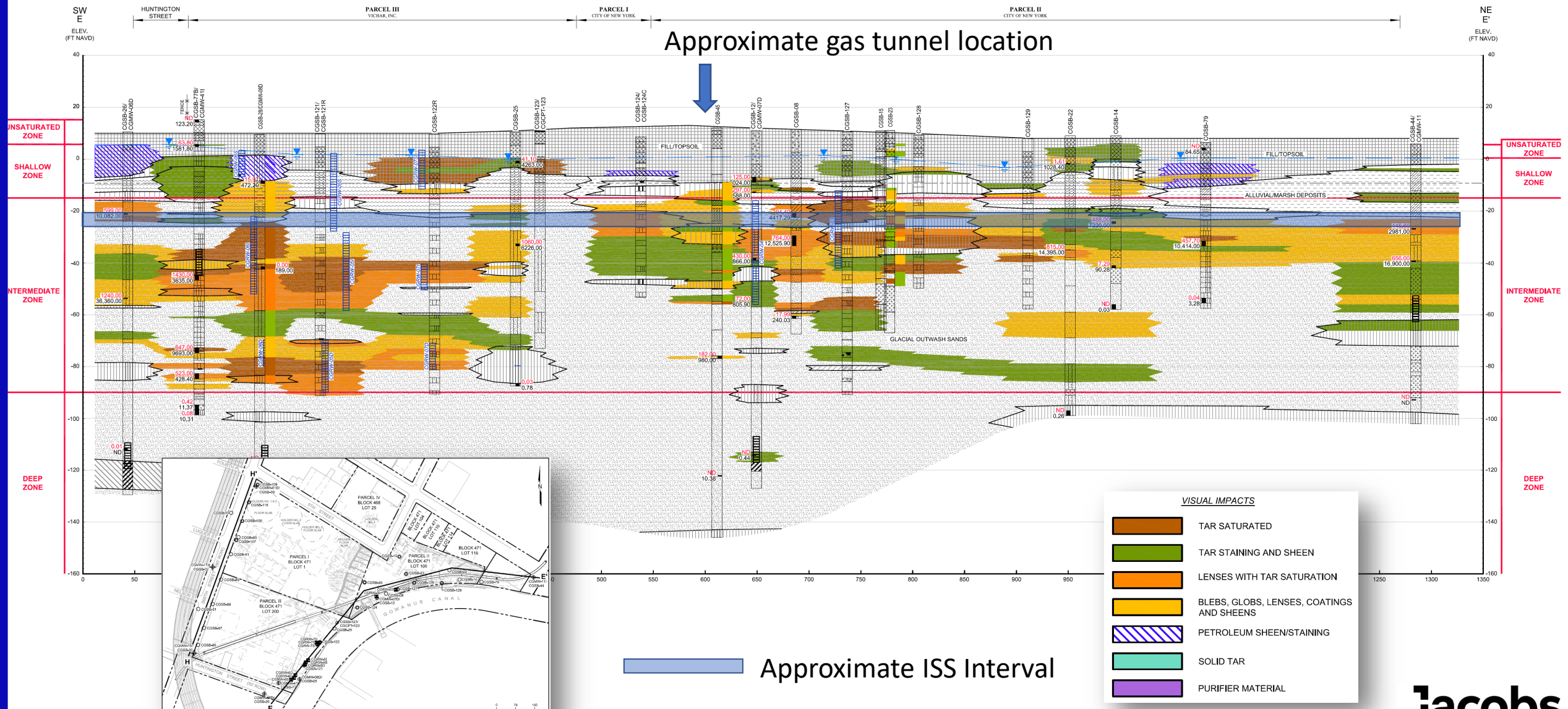
SUPPLEMENTAL EXCAVATION AREA COMPLETED DURING REMEDIATION PROJECT (APPROXIMATE)

VISUAL IMPACTS LEGEND:

NAPL SATURATED

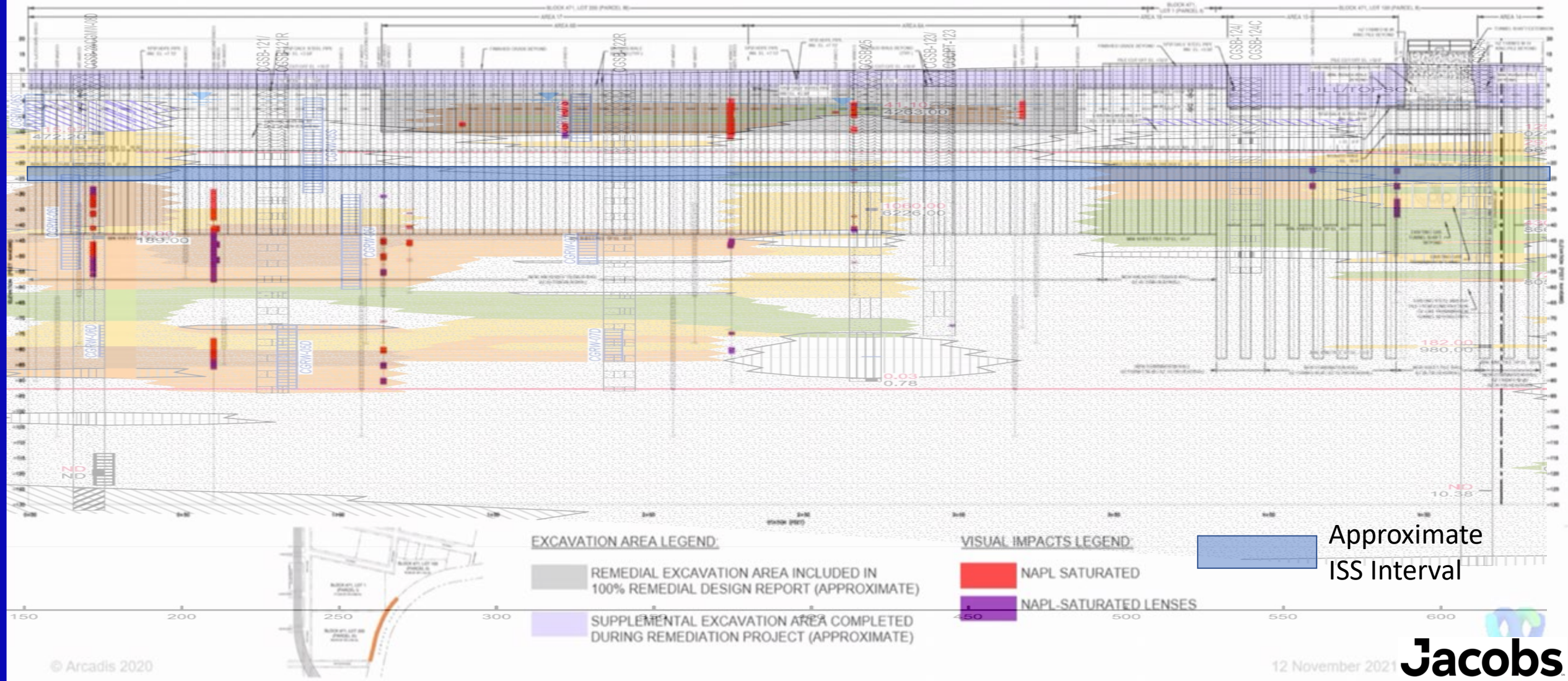
NAPL-SATURATED LENSES

Approximate ISS Interval

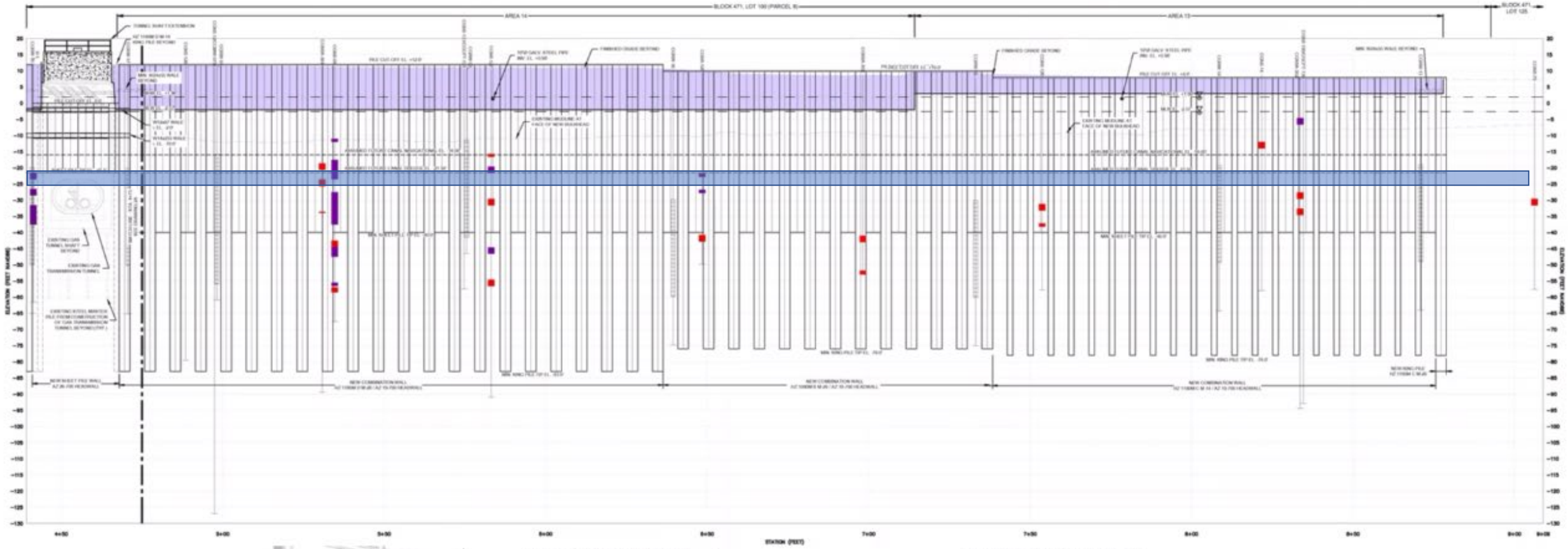

SW
E
NE
E'
ELEV. (FT NAVD)
HUNTINGTON STREET
PARCEL III
VICHAR, INC.
PARCEL I
CITY OF NEW YORK
PARCEL II
CITY OF NEW YORK
Approximate gas tunnel location
UNSATURATED ZONE
SHALLOW ZONE
INTERMEDIATE ZONE
DEEP ZONE
FILL/TOPSOIL
ALLUVIAL/MARSH DEPOSITS
GLACIAL OUTWASH SANDS
Approximate ISS Interval
VISUAL IMPACTS
TAR SATURATED
TAR STAINING AND SHEEN
LENSES WITH TAR SATURATION
BLEBS, GLOBS, LENSES, COATINGS AND SHEENS
PETROLEUM SHEEN/STAINING
SOLID TAR
PURIFIER MATERIAL
PARCEL IV BLOCK 468 LOT 25
PARCEL I BLOCK 471 LOT 1
PARCEL II BLOCK 471 LOT 200
PARCEL II BLOCK 471 LOT 100
BLOCK 471 LOT 116
GOWANUS CANAL
SCALE IN FEET

Jacobs

Cross Section Along Citizens Bulkhead Barrier Wall



Cross Section Along Citizens Bulkhead Barrier Wall



EXCAVATION AREA LEGEND:

REMEDIAL EXCAVATION AREA INCLUDED IN 100% REMEDIAL DESIGN REPORT (APPROXIMATE)

SUPPLEMENTAL EXCAVATION AREA COMPLETED DURING REMEDIATION PROJECT (APPROXIMATE)

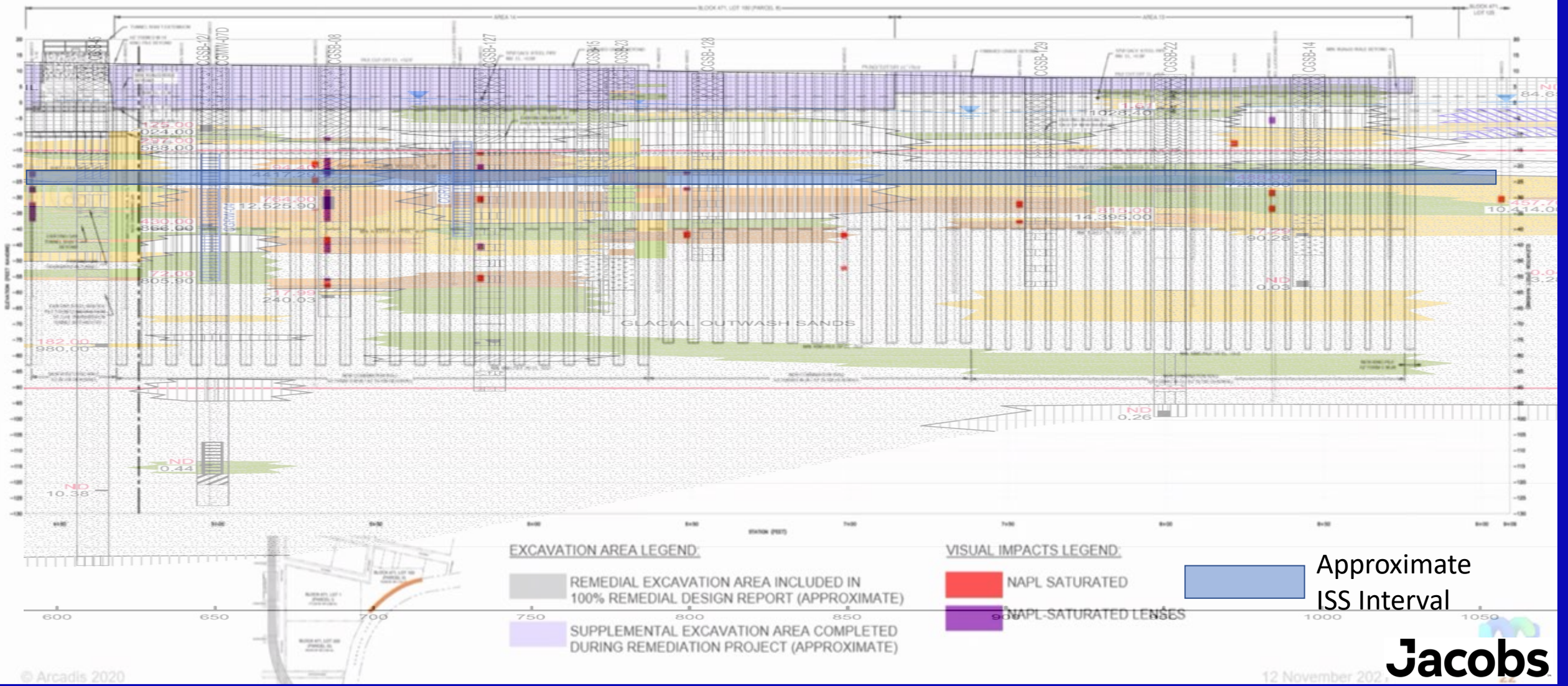
VISUAL IMPACTS LEGEND:

NAPL SATURATED

NAPL-SATURATED LENSES

Approximate ISS Interval

Cross Section Along Citizens Bulkhead Barrier Wall



NAPL Conclusions

- NAPL mobility is not an issue
- NAPL from the Citizens site will not impact the Canal remedy
- NAPL recovery is an effective means for reducing the quantity of accumulated NAPL (where present) in the subsurface
- ISS layer will have high capillary entry pressure

IV. Recap/Summary

Recap/ Summary

1. NYSDEC's remedy (including the Canal remedy) does not result in groundwater mounding that impacts redevelopment.
2. SVI is not typically an issue at MGP sites. However, vapor mitigation systems will be integrated into building construction.
3. NYSDEC's remedy supports future use of the Site and obligates the future Site use to be in harmony with the environmental remedy.
4. Dissolved phase constituents from the Citizens site will not adversely impact the effectiveness of the USEPA's Canal remedy or pose an offsite risk to human health or the environment.
5. NAPL mobility is not an issue. NYSDEC's remedy prevents NAPL from the Site adversely impacting the Gowanus Canal Remedy and includes NAPL recovery to remove subsurface NAPL.
6. NYSDEC's remedy is protective of human health and the environment.

Conclusion: The agency-approved Citizens remedy is protective as designed